

P031 Impact of Ca^{2+} on the Group II Intron Ribozyme ai5 γ
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Group II introns catalyze selfsplicing only in the presence of mono- and divalent metal ions, such as K^+ or Mg^{2+} . To test the effect of Ca^{2+} , another biologically important metal ion, on the first step of splicing, we have performed trans-cleavage assays of the yeast mitochondrial intron ai5 γ .^[1] We could show that under single turnover conditions, a concentration of 5 mM Ca^{2+} inhibits selfsplicing. We have investigated the effect of different Mg^{2+} : Ca^{2+} ratios on the reaction kinetics and carried out chemical shift mapping experiments of D5 with various Ca^{2+} concentrations by NMR. Mg^{2+} and Ca^{2+} not only partly bind to different sites^[2] but Mg^{2+} also binds to D5 with a tenfold higher affinity than Ca^{2+} . We propose that the above mentioned differences are responsible for the opposite effect of Mg^{2+} and Ca^{2+} on the catalytic domain D5 of the group II selfsplicing intron ai5 γ .

[1] O. Fedorova, L. J. Su, A. M. Pyle, *Methods* 2002, 28, 323.

[2] R. K. O. Sigel, D. G. Sashital, D. L. Abramovitz, A. G. Palmer III, S. E. Butcher, A. M. Pyle *Nature Struct. Molec. Biol.* 2004, 11, 187.
R. K. O. S is a *SNF-Förderungsprofessor* of the Swiss National Science Foundation.